



IAP15 Rec'd PCT/PTO 15 AUG 2006

IAPCT #

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Inventors: Dragan Petrovic, et al. Art Unit 2681

Appln. No.: 10/524,141

Filed: September 19, 2005

For: METHOD OF PROCESS MANAGEMENT FOR
MULTIPLE HARQ PROCESSES

PETITION TO MAKE SPECIAL

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Assistant Commissioner of Patents
Washington, DC 20231

Sir:

The Applicants respectfully petition that the above-captioned application be granted special status. The requirements of MPEP section 708.02(VIII) are complied with as follows:

(1) The petition fee set forth in 37 CFR 1.17(i) is authorized to be charged to Deposit Account No. 19-4375.

(2) All pending claims (claims 25-28) of the present application are believed to be directed to a single invention; if the Office determines that all the claims presented are not obviously directed to a single invention, the Applicants agree to make an election without traverse as a prerequisite to the grant of special status.

(3) A pre-examination search has been made in the form of a search report in a counterpart PCT International Application (International Search Report (ISR) dated September 23, 2003) and a European Search Report (ESR) dated February 23, 2003. The ISR and the ESR cite identical art. Under MPEP 708.02, VIII, a search made by a foreign patent office satisfies the search requirement. Information Disclosure Statements directed to the art cited in the ISR and the ESR were filed on February 11, 2005, and April 29, 2005. Identical Information Disclosure Statements directed to art discussed in the present application were filed on May 13, 2005 and September 20, 2005.

Also, a pre-examination search has been made, and the field of search is:

Class 370, subclasses 329, 335, 341, 342, 348 and 428;

and

Class 714, subclasses 748, 749 and 750.

Examiner Steven Nguyen was consulted for the above field of search.

An Information Disclosure Statement directed to the references located in the pre-examination search is filed concurrently herewith.

(4) One copy each of the prior art deemed most closely related to the subject matter encompassed by the claims is of

record in the form of the art cited in the above-noted Information Disclosure Statements.

(5) The following is a detailed discussion of the art of record, and comments pointing out how the instant claimed subject matter is patentably distinguishable thereover.

A. Discussion of All References of Record

S. Kallel et al., "Throughput Performance to Memory ARQ Scheme," cited at application page 1, third full paragraph, discusses general aspects of Types I, II and III ARQ schemes as described at application pages 1 and 2.

Ghosh, et al., "Performance of Coded Higher Order Modulation and Hybrid ARQ for Next Generation Cellular CDMA System," cited in the paragraph bridging application pages 1 and 2, relates to Type II and Type III ARQ schemes, where received re-transmissions are combined and redundancy can be adapted according to channel conditions.

3GPP TR 25.848 v4.0.0(2001-03) "Physical Layer Aspects of UTRA High Speed Downlink Packet Access (Release 4)," discusses HARQ and adaptive modulation and coding schemes in high speed downlink packet access. This document is cited in the paragraph bridging application pages 1 and 2, with respect to Type II and Type III ARQ schemes, where received re-transmissions are combined and

redundancy can be adapted according to channel conditions and discusses high speed downlink packet access. See Chapters 5.1 and 6.7.

3GPP TSG RAN TR 25.848 V4.0.0, "Physical Layer Aspects of High Speed Downlink Packet Access," (discussed above) and 3GPP TS 25.308 v5.2.0 (2002-03), "High Speed Downlink Packet Access (HSDPA); Overall description; Stage 2 (Release 5)," both cited at application page 3, fourth paragraph, et seq., discuss the high speed downlink packet access standard.

3GPP TS 34.108 v4.1.0 (2001-12), "UE Conformance Testing (Release 4)," describes that the signaling between RNC and UE using radio bearers mapped on dedicated channels is slow due to delays in the transport network between RNC and Node B and due to a larger transmission time interval (TTI) of dedicated channels and states that it may be beneficial to route some signaling traffic over HSDPA connection. See Chapter 6.10.3.4.1.2.

3GPP TSG RAN TS 25.331 V5.0.0, "RRC Protocol Specification," cited at application page 8, fourth paragraph, describes that downlink messages are in general significantly larger than uplink messages since they typically include more parameters.

US 2002/001296, cited under Category A in the ISR, discloses a hybrid ARQ type II/III system in an asynchronous mobile communication system. The HARQ system includes a data delivery

method on the downlink, wherein a serving radio network controller (SRNC) is directly connected to a UE to allocate wireless resources to the UE and provides services by interlocking with a wireless communication core network in case of a call connection, and a controlling radio network controller (CRNC) controls a shared channel of a radio network. The SRNC and the CRNC are located on different radio networks. The data delivery method generates a radio link control-protocol data unit (RLC-PDU) in a radio link control (RLC) layer of the SRNC, and generates a part having RLC-PDU information needed for supporting hybrid ARQ type II/III based on a header of the RLC-PDU (HARQ-RLC-Control-PDU). The RLC-PDU and the HARQ-RLC-Control-PDU are transmitted to a medium access control dedicated (MAC-D), which treats a general user part of a MAC layer through a logical channel. The RLC-PDU and the HARQ-RLC-Control-PDU are transmitted from the MAC-D of the SRNC to a medium access control common/shared (MAC-C/SH), which treats common/shared channel part on the MAC layer of the CRNC. The RLC-PDU and the HARQ-RLC-Control-PDU in the MAC-C/SH of the CRNC are transformed to a transmission block, and this block is transmitted to a physical layer of a Node B through a transport channel. The transmission block is processed to a radio transmission form in the physical layer of the Node B and the result is transmitted from the Node B through the physical layer.

EP 1207647, cited under Category X in the ISR, discloses a HARQ system in, for example, a UMTS system having a time division multiplexed downlink shared channel which is defined by a plural channelization codes. Wireless units provide rate and antenna feedback from which the base station decides whether to provide a wireless unit with packet data access to the downlink shared channel. The downlink shared channel includes a number of transport channels, and the transport channel multiplex structure maps or multiplexes the transport channel onto a coded shared transport channel which in turn is multiplexed or mapped into a physical downlink shared channel for transmission to the wireless units. The system handles groups of transport channels configured in a similar fashion to be multiplexed into a physical downlink shared channel (PDSCH).

WO 03036844, cited under Category P/X in the ISR, discloses a medium access control (MAC) architecture which handles plural data flows, with each data flow having an associated priority and comprising plural data blocks. The MAC architecture specifies a scheduling entity that determines when transmissions are serviced, and which HARQ entity performs the servicing. The HARQ entities determine whether each prior block was successfully transmitted and, if not, request retransmission of unsuccessfully transmitted data blocks. The scheduling protocol takes into account whether or

not previously transmitted data blocks require retransmission, with the ability to initiate new transmissions at any time and to reinitiate previously unsuccessful transmissions at any time. The scheduling prioritization is based on required transmission latency for each data block, or block error rate requirements, and the like.

USPN 6,735,180 discloses a HARQ technique in which received packets are acknowledged by transmitting feedback data to the sender, wherein the ACK message comprises the reservation of obtaining a plurality of slots in the uplink or downlink dedicated physical channel radio frame for the feedback data alone.

US 2005/0073987 discloses a HARQ technique states that, at the receiver, a UE, to support the HARQ protocol, HSDPA requires the support of functionality of HARQ entity, HARQ process, reordering buffers and disassembly entity. As shown in Figs. 4 and 5, one UE has only one HARQ entity while supporting a number of parallel HARQ processes. The HARQ entity processes the HARQ process identifiers received on HS-SCCH. Based on the HARQ process identifier, the HARQ entity allocates the received MAC-hs PDU to the corresponding HARQ process.

USPN 6,693,910 discloses a HARQ processing scheme comprising multiple parallel ARQ processors that repeatedly transmit several sequential attempts of a data block until the transmission is

successful. This patent discloses a Last-In-First-Out (LIFO) protocol for loading the transmitting HARQ processors. A scheduler assigns the next sequential data block to the most recently released HARQ processor. The LIFO loading policy increases the probability that, by reading the new HARQ processor identifier (ID), the UE will be able to determine at an earlier time whether the missed TSN is due to delay in retransmission or due to the release of a transmission by the Node B. Once the UE MAC-hs receives a new TSN with the same HARQ processor ID, the missed data block with the old TSN is forwarded to the higher layer processes to take the appropriate action for data block recovery.

USPN 6,021,124 discloses a multi-channel ARQ scheme for communicating data packets in parallel over a communication link that is subdivided into a number of channels. The network sequentially multiplexes the data packets at the source over corresponding channels during multiplexing rounds. The system applies a stop-and wait ARQ method on each one of the channels and determines whether the destination has sent an ACK with respect to a previously transmitted data packet. If not, the network retransmits only the data packets that are not positively acknowledged, after being transmitted during a previous multiplexing round. In one embodiment, the channels are pseudo-randomly assigned.

B. Discussion of How the Claimed Invention Patentably Distinguishes over the References of Record

It is submitted that the references cited above, considered alone or in combination, fail to disclose or suggest at least the subject matter of independent claims 25 and 27 directed to managing up to a pre-defined number of parallel hybrid ARQ (HARQ) processes involving packet combining by reserving at least one HARQ process out of the predefined number of parallel HARQ processes, and restricting the use of the reserved at least one HARQ process for one of a separate data flow identifier and a logical channel identifier.

It is submitted that each of the references of record lacks any teaching or suggestion of reserving at least one HARQ process out of the predefined number of parallel HARQ processes, and restricting the use of the reserved at least one HARQ process for one of a separate data flow identifier and a logical channel identifier. Further, it is submitted that there is nothing in the combined teachings of these references that would have rendered such subject matter obvious to those skilled in the art.

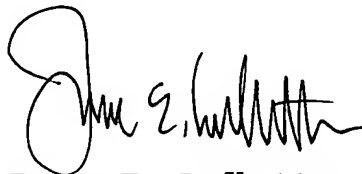
Thus, the Applicants submit that the above-noted combinations of features of the independent claims are not taught or suggested by the combined teachings of the art of record, and thus the

independent claims, and all claims dependent therefrom, are patentable.

Accordingly, in light of the foregoing discussion pointing out how the claimed invention distinguishes over the cited references, the Applicants respectfully submit that the inventions of all the presently pending claims are not anticipated by these references and would not have been obvious over any combination thereof.

Grant of special status in accordance with this petition is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "James E. Ledbetter", with a large, stylized initial "J" and a cursive surname.

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